IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

Schwartz

Serial No.:

09/815,978

Filed:

March 22, 2001

For:

HYDRAZINE-BASED AND CARBONYL-BASED BIFUNCTIONAL CROSSLINKING

REAGENTS

Art Unit:

Unassigned

Examiner:

Unassigned

I hereby certify that this paper and the attached papers are being deposited with the United States Postal Service as first class mail in an envelope addressed to:

ATTN: BOX PGPUB DRAWINGS

Commissioner for Patents

Washington, D.C. 20231, on this date.

04/17/01

Date

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PETITION PURSUANT TO 37 C.F.R. §1.182 - QUESTIONS NOT SPECIFICALLY PROVIDED FOR: REQUEST FOR ENTRY OF REPLACEMENT DRAWINGS

ATTN: BOX PGPUB DRAWINGS

Commissioner for Patents Washington, D.C. 20231

Dear Sir:

This is a Petition pursuant to 37 C.F.R. §1.182 to request the entry of replacement drawings in the publication of the above-identified application. The replacement drawings provided herewith are Formal Drawings. Therefore these drawings are of better quality than those originally filed. Applicants respectfully request the entry of the replacement drawings.

Respectfully submitted,

HELLER, EHRMAN, WHITE & McAULIFFE LLP

By:

Stephanie L. Seidman Registration No. 33,779

Attorney Docket No.: 37154-753

Address all correspondence to:
Stephanie L. Seidman, Esq.

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hydrazine

semicarbazide

$$R \underset{O}{ \bigvee_{N}} NH_2$$

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hydrazide

thiosemicarbazide

thiocarbazide

$$R \searrow O \\ N \\ N \\ H$$

carbonic acid dihydrazine

hydrazine carboxylate

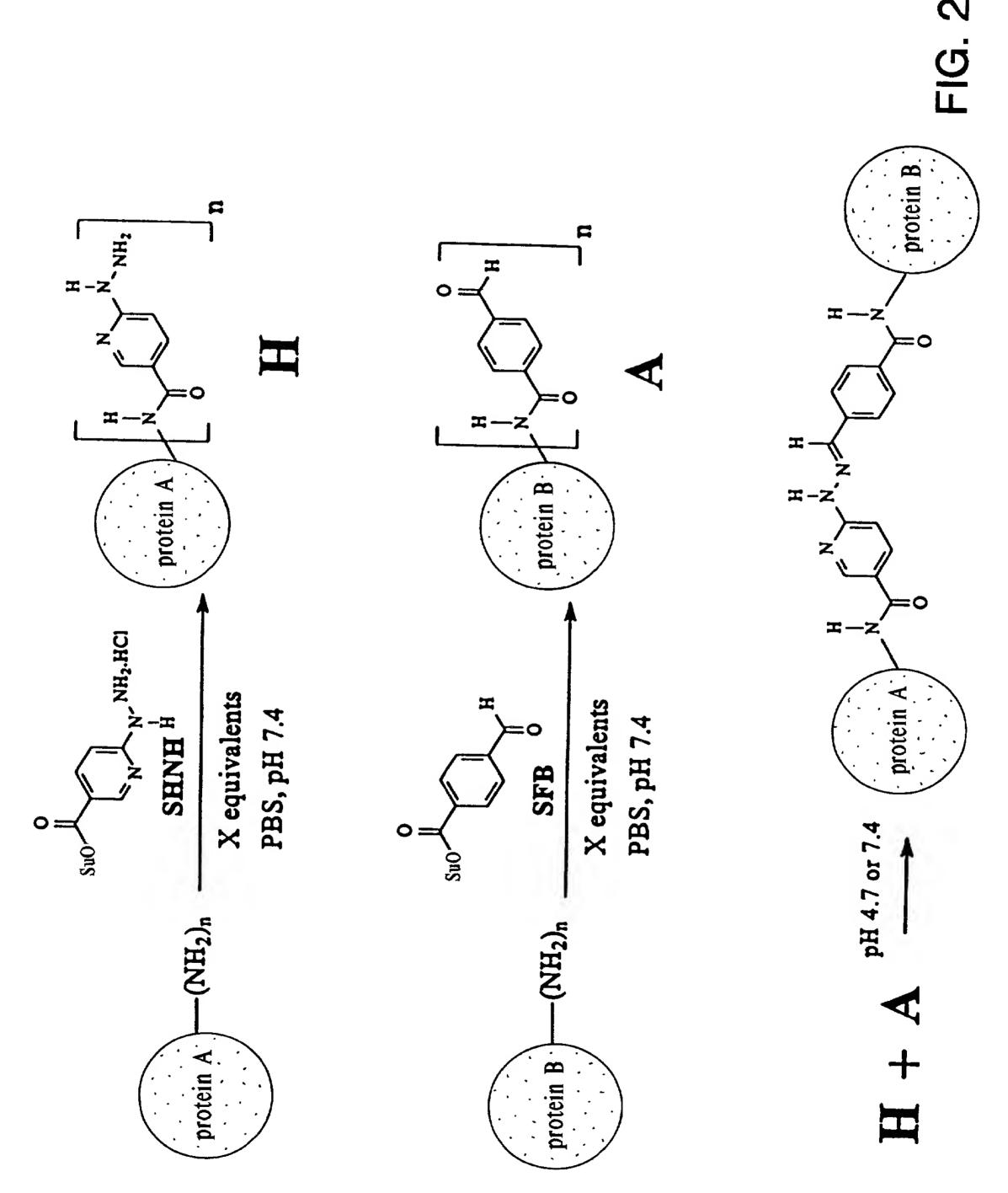
FIG. 1

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NH₂ CS₂, Et₃N N=C=S HO THF HO

FIG. 3

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1) acetone
SuO
NHS, DCC, DMF

FIG. 4

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Preparation of 5'-aromatic alehyde-modified oligonucleotide:

Preparation of 5'-heteroaromatic hydrazine-modified oligonucleotide:

Conjugation of hydrazino-modified oligonucleotide to aldehyde-modified oligonucleotide

FIG. 5

phosgene, Et3N, THF

t-butyl carbazate, THF

1) HCl/dioxane

2) acetone, MeOH

NHS, DCC, THF

FIG. 6

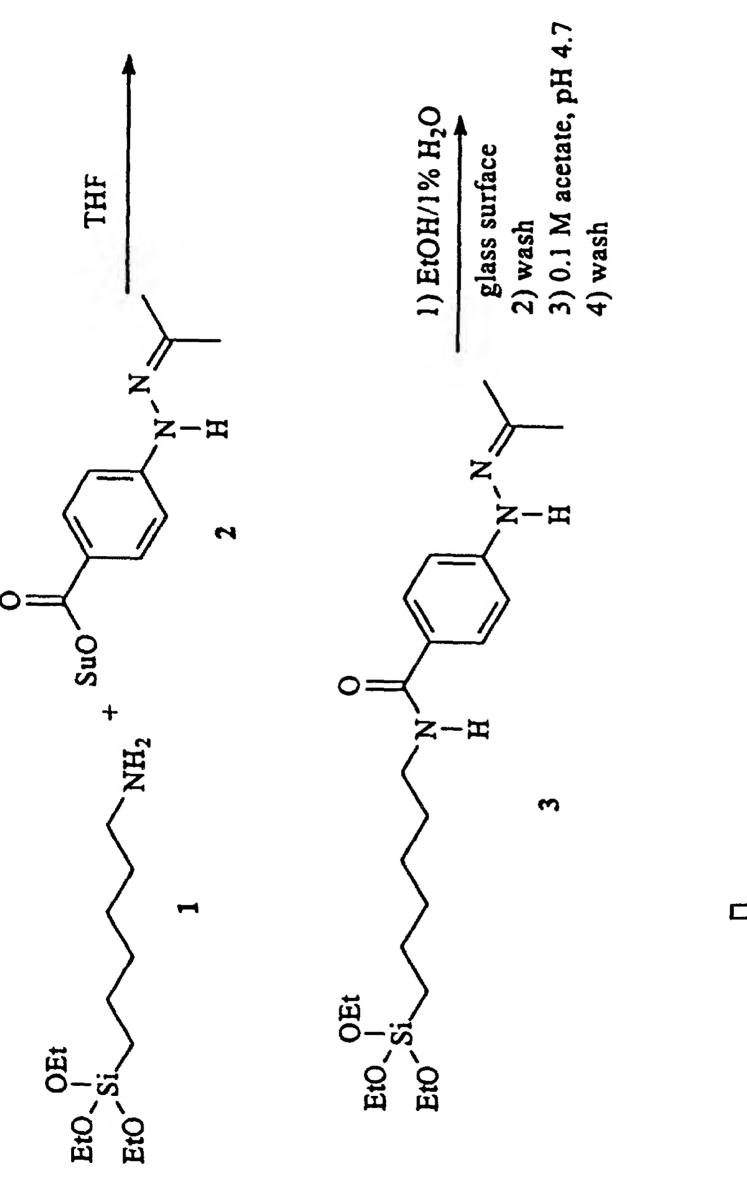
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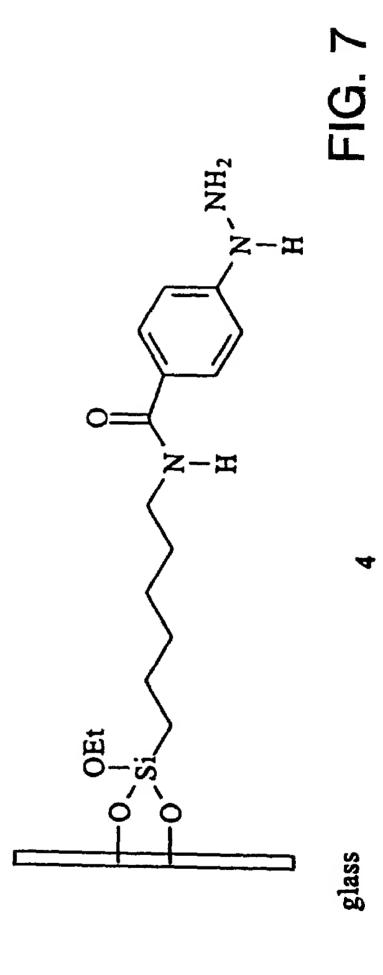
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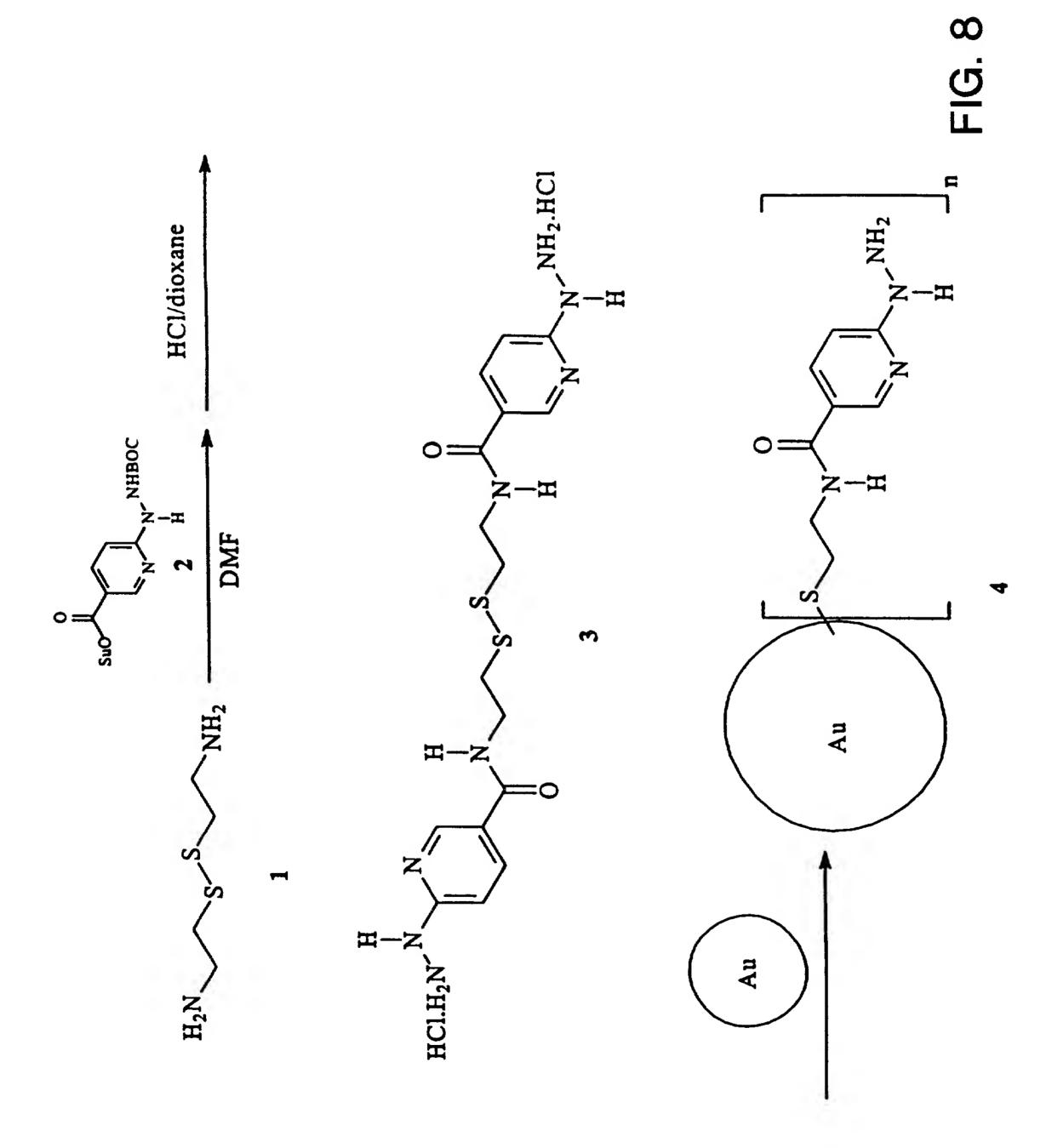


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Stephanie L Seidman Esq Heller Ehrman White and McAuliffe LLP 4250 Executive Square 7th Floor La Jolla CA 92037-9103

Dear Applicant:

The Box PGPub replacement drawings for application number 09/815,978 received on 4/23/01 by the U. S. Patent and Trademark Office will be included for patent publication.

Telephone inquiries should be directed to Customer Service, Office of Initial Patent Examination, at 703-308-1202.

D. Durham

Signature of Reviewer, Office of Initial Patent Examination